[Shri Dharam Chander Prashant]

But, still there is no light. This reminds me of a verse from a famous English poem, a rhyme of the "Ancient Mariner" of Coleridge:

"Water, water everywhere, Not a drop to drink."

Madam, it is very surprising that despite having so many power houses we have no power. We are told that the Salal Hydel Project will solve the problem. This project was started eighteen years back. It is nearing completion. But I am told it will generate and provide adequate power covers four months only. In lean period—to the State in peak time. Peak time eight months—only 15 megawatt power will be given to the State which is not sufficient even for Srinagar city. This is the position. That means Salal will shed fifteen drops of megawatts of power. But this problem will be solved when we have Uri Hydel project, Thein Dam Project, Dul Hasti and Salal projects completed. Now, as I said the Salal Project will provide 15 megawatt power in lean period to the State. Previously we were told that the Salal Project will solve the entire problem of the State.

"बहुत शोर सुनते थे पहलू में दिल का,
जब चीरा तो एक कतराये खूं न निकला।"

But it will give 15 drops of megawatt power i.e. 15 drops of blood.

Now, Salal has taken 18 years. I do not know how many years this Uri Project will take. Dul Hasti may take another hundred years. But let me tell you we will wait for thousand years till somebody comes and provides us light as

"हजारों साल नरगिस अपनी
बेनूरी पर रोती है,
बड़ी मुश्किल से होता है
चमन में दीदावर पैदा।"

Thank you.

THE ATOMIC ENERGY (AMENDMENT) BILL 1987

THE DEPUTY CHAIRMAN: Shri K. R. Narayanan will now move the Atomic Energy (Amendment) Bill, 1987.

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCES AND TECHNOLOGY AND MINISTER OF STATE IN THE DEPARTMENTS OF OCEAN DEVELOPMENT, ATOMIC ENERGY, ELECTRONICS AND SPACE (SHRI K. R. NARAYANAN): I move:

"That the Bill further to amend the Atomic Energy Act, 1962, be taken into consideration."

I have a short statement to make.

The Atomic Energy Act, 1962 provides for the development, control and use of atomic energy for the welfare of the people of India and for other peaceful purposes and matters connected therewith. Under the Act, only the Central Government has the power to produce and supply electricity from atomic energy.

Section 3 of the Atomic Energy Act deals with the general powers of the Central Government with regard to the production, development and use of atomic energy, including production and supply of electricity from atomic energy. This Section is being amended to enable a body other than the Central Government to take up the work of production, development and use of atomic energy, including production and development of electricity from atomic energy. The power to do research and development on atomic energy will still vest with the Government.

Section 22 of the Act gives the Central Government authority to develop national policy in regard to atomic power, coordinate such policies with the Central Electricity Authority and the State Electricity Boards, to implement scheme for the generation of electricity in pursuance of such policy and to operate atomic power stations in consultation with the State Electricity Boards, to enter into agreements regarding the supply of such electricity and to fix rates for and regulate the supply of electricity from atomic power stations. This Section is being amended to extend these provisions to a

body other than the Central Government set up for the purpose of generating electricity from nuclear energy.

Section 22(i) (b) of the Act is being amended to allow such a body to fix tariffs on lines similar to that adopted by the generating companies like the National Thermal Power Corporation.

Section 23 of the Atomic Energy Act vests in the Central Government the authority to administer the Factories Act, 1948, in relation to factories owned by the Central Government, and engaged in carrying out the purposes of the Atomic Energy Act.

The section is being amended to extend the provisions of this section to a body other than the Central Government set up for the purposes of generation of electricity from atomic energy. The Bill will come into force from the date of receipt of assent from the president. The proposed amendments are purely of enabling nature.

Madam, I commend the Bill.

The question was proposed.

PROF. B. RAMACHANDRA RAO (Andhra Pradesh): Madam Deputy Chairman, I rise to support this Atomic Energy (Amendment) Bill, 1987. It appears to me that this is a very simple Bill enabling the Central Government to establish an independent authority under the overall umbrella of the Atomic Energy Commission and the Union Government to look after the generation of nuclear power, its distribution, to coordinate with the State Governments about the supply and fixing the rates, etc.

[**The Vice-Chairman (Shri H. Hanumanthappa)** in the Chair]. In this connection I cannot but refer to the great founder of the atomic energy in the country, Sir Homi Bhabha who laid the foundation for atomic energy way back in the year 1957. Ever since Dr. Bhabha has taken up atomic energy, it has progressed in leaps and bounds. In fact, the first atomic reactor Apsara laid the foundation for generation of atomic power. I remember distinctly that day when Apsara reactor turned critical, it was a day of our great achievement for our country. It is indeed a great augury that today the Atomic Energy Commission is headed by no less a person than Dr. Srinivasan who has been associated with the construction of the first Apsara reactor plant. In fact, it is timely that a engineer of his eminence is heading the atomic energy organisation at this time. I would like to mention that we have more than 4 nuclear power stations in operation and many more are coming into operation. The dimensions of the atomic power plants, the work involved, the finances, the management, all these have become a heavy burden on the present Atomic Energy Commission which is directly controlling it. Apart from that, a time has come when these various individual nuclear power plants should be amalgamated under one nuclear power authority. I do not know what name the Government is planning to give. I think a 'Nuclear Power Authority' would be appropriate and this should take over all the nuclear power plants past, present and future. Now, once these are taken over by the Central Authority, as the Minister himself has said they will function like N.T.P.C. and many other electricity authority bodies. They should strive to make it self-sufficient rather than running at a huge loss as many public sector undertakings are going now-a-days. It is often claimed by a number of people including Dr. Ramanna and others that the atomic energy is cheaper than the coal power. It is time now that they prove it under the new organisation and see that this entire power sector is self-sufficient and runs at profits.

About the problems, I would like to mention only a couple of them. It appears that one of the problems which many States are having is whether the atomic power plants cause any danger. After the Chernobyl incident, people have become a little afraid of nuclear power plants. Some time ago, we have seen that there was an agitation in Karnataka about the setting up of the nuclear power plant. Now, I would like to suggest to the Government that the safety factors involved in the nuclear power generation must be widely circulated and people should be

[Prof. B. Ramachandra Rao]

educated before a plant is established that it is not dangerous. One of the things which has become controversial now-a-days is about Narora plant having been set up in a seismic zone. There has been a controversy on that account and therefore, I would like to say that in future whenever any plant is set up, it must be in a seismically stable zone rather than in an unstable zone.

Now, I would like to mention that the most important advantage of forming this into a separate Nuclear Power Authority is that all the funds need not come from the Central Government. The Union Government can only subsidise to a certain extent and they should raise their resources as NTPC has done by the bonds that have been issued. The new organisation should also be able to raise their own funds through public bonds and therefore, to that extent, the Government exchequer is not strained by this creation. I hope that the new organisation would take advantage of this.

The last point that I would like to mention is that today we are aiming at about 10,000 megawatts of power by the end of this century. I doubt whether we can achieve that target but let us hope we are able to achieve this goal. Unless this new Board is established very soon and is headed by a competent person who works in collaboration with all the capable staff that we have, we will not be able to achieve the target. In the present nuclear power sector, we have very eminent engineers who are running this orgaisation; but for a few pitfalls we have noted in RAPS, except that, we have been running these units very successfully. I would, therefore, like that this should be done very soon and they be given the charge that the 10,000 megawatts power, to be generated by the end of the century, should be their first priority. Thank you very much for giving this opportunity. I support this Bill entirely.

SHRI CHIMANBHAI MEHTA (Gujarat): Mr. Vice-Chairman, Sir, I welcome this Bill because it is a right step in the direction of growth of our electricity industry as well as for the development of atomic energy and connected issues with that question. Now, we know that we have made some strides in the sphere of development of electricity. When the country became free, we were just producing 1700 megawatts of electricity but today we have gone beyond 51,000 megawatts of production and by the end of the Seventh Plan, we will be reaching the target of 72,000 megawatts of electricity production. On the whole, this looks to be a remarkable achievement but we know that in our country, per capita consumption is just 180 kilowatt. In the developed countries, the consumption is around 7,000 kilowatts per person. Even a country like China is having much more consumption than us and also Pakistan's is slightly higher. So, today we have taken a right step. when this Bill becomes Act with the consent of Parliament as we are going to adopt it because it is a constructive measure, progressive measure, because by the end of this century, 10,000 megawatts of electricity production we want realise and therefore, this Authority is coming into existence. It is good.

Now, my question is also related with some other developments. Because we are discussing these atomic matters, we have to be careful with the world around us. Although we are discussing electricity, the entire industry has to carry the burden in various spheres also and also in defence. Sir, may I bring to your attention that Pakistan is almost on the verge of producing atomic bomb? I know this Bill does not relate with atomic weaponry. But our scientists who are working on electric energy, electricity production and other things, should also be encouraged in other directions and I know the Government under Shri Rajivji's leadership is quite aware of the responsibility. Pakistan, with this weapon in the hand of the military regime, can create a problem for us. Now Pakistan is an American base. It is not just a satellite country. It is not just a hostile neighbour, although we want to be very friendly with it. In Western Asia, after Iran, Pakistan is a major military base for the U.S.A. and we know how the

U.S. administration is running. They could attack Libya because they charged that the Libyan Government was helping terrorists. President Reagan himself was helping the Nicaraguan counter-revolutionaries known as 'Contras'. Now it is coming every day in their own press. With such super powers and Pakistan over there we have to become extremely conscious. Terrorists are being trained to attack India in Pakistan. I do not want to say that we should do that. But let them also pose the issue, "If they could attack Libya in the name of terrorist base, is India entitled to pay them in the same coin when Pakistan is training terrorists to attack India?". This is a very important question that one has to raise. We are happy that the Sri Lankan issue has been settled. We would like to have settled our problems with Pakistan also. But things are becoming uncontrollable.

Today, we are on the limited issue of this Atomic Energy (Amendment) Bill when we are going a step forward in organising the production with a new set-up. I welcome this Bill and request the Honourable Minister to consider the other issues also. Thank you very much.

SHRI K. R. NARAYANAN: Sir, I am very grateful to the House for the support it has extended to this Bill and I am happy, Sir, that there has been absolutely no opposition to this Bill. It is almost as if we have achieved superconductivity in the affairs of Parliament—No resistance to electricity. My Honourable friends Dr. Rao and Shri Chimanbhai Mehta have made some very important suggestions. I want to assure them that we will take their suggestions into full consideration and the objective, the aim, of the Government is to make this new Nuclear Power Corporation function efficiently so that our target of producing 10,000 MW of electricity by 2000 AD is achieved. I want to assure Dr. Ramachandra Rao that the Government is determined to achieve this target. There are absolutely no technical obstacles in achieving this target of 10,000 MW of atomic electricity production. What stands in the way is actually the scarcity of resources, and it is precisely for overcoming this obstacle that this new Nuclear Power Corporation is being set up. I do not know what exact name we will give this Corporation, but certainly the suggestion made by Dr. Rao will be borne in mind. As I said, the major obstacle to achieving the target of 10,000 MW of electricity by the end of the century is actually the scarcity of resources and we believe that by setting up a Government company for running the Corporation, for designing and conducting the operations of the nuclear power plant, it should be possible to raise money from the open market. We have envisaged that by 1994-95 the need for Government funding of the Atomic Power Corporation will be almost eliminated and the Corporation will be able to function on its own as a self-sufficient entity. Dr. Rao has mentioned the fear of danger which may arise from the nucear power plant because of threats of safety. After the Chernobyl accident the whole world is fully conscious of the dangers inherent in nuclear reactors. But the world has not been deterred by this accident. In fact, Secretary-General Gorbachev himself said after the Chernobyl accident that he cannot conceive of a world without nuclear power, nuclear electricity. In fact, there have been many important statements. I recall a statement by the Chancellor of the Federal Republic of Germany that the entire German economy would collapse and Germany's future as an industrialised nation would be jeopardized if it abandoned its programme for atomic energy. I do not have to expatiate on this theme because there has been so much support in the House to our effort for generating nuclear power. I only want to assure the House that we have taken every precaution for eliminating the dangers inherent in nuclear energy. Actually the main thing we have done is to introduce safety features, engineer the safety features into our atomic reactors, so that the worst case disaster that we fear of a danger of atomic explosion will not take place in any of these plants, through containment and other engineering methods built into these reactors. I also want to inform the House that at the instance of the Prime Minister we have set up a National Emergency Response Committee for looking into what we call the offsite emergency

[Shri K. R. Narayanan]

in case of an atomic disaster in any of these plants. This Committe has met twice and it has also set up four regional committees in Maharashtra, Tamil Nadú, Rajasthan and Gujarat, called the Regional Emergency Response Committees. The job of these Committees is to organize public reaction and public response to some kind of a danger like this and we have established coordination and interaction between the civil authorities in the States and the personnel of the atomic power plants. Therefore, every possible precaution, engineering and design, as well as public organization is being undertaken to deal with the contingency of any such danger. We have also taken steps to infrom the people of what is being done. The Atomic Energy Department has itself produced some very readable and attractive brochures to disseminate this information among the people and I found some fine documents, publicity documents, produced by the Government of Maharashtra and the Government of Tamil Nadu telling people about the dangers and also how they should behave in the event of such a danger in order to tackle such an aweful contingency.

Dr. Rao has mentioned about the sitting of the atomic power plants in non-seismic zones. We have tried to avoid to the best of our ability such zones for locating atomic power plants. But it may be that in a seismic zone like Narora it has become, sometimes for economic and other reasons, necessary to build a plant there. But when we do that, in rare cases, we take every precautionary step to engineer into the plant anti-seismic devices which are technologies developed and well known in the world. Dr. Rao himself, I am sure, is aware that in a country like Japan, where the whole country is a seismic zone, there are many, dozens of atomic reactors and none of those reactors has given any kind of danger to the people of that country. Therefore, it is possible through engineering and technological devices to build nuclear reactors which can stand up against any seismic event. But, as I said, we would try to avoid such zones. But, if for economic reasons or other reasons it is necessary, then we would try to see that we are in a position to build reactors which withstand even an earthquake.

Now, Mr. Chimanbhai Mehta has touched upon the basic question of low consumption, per capita consumption, of electricity in our country. It is only in order to overcome this and to see that our country, our economy and our people have sufficient amount of electricity for their consumption and for industrial purposes that we have introduced the Bill to amend the Atomic Energy Act and in order to enable a Nuclear Power Corporation to be set up as a public company which can borrow funds from the open market and with these enhanced funds we can build enough atomic reactors and produce enough electricity for meeting the industrial as well as domestic consumption needs of the people. Thank you, Sir.

THE VICE-CHAIRMAN (SHRI H. HANUMANTHAPPA): The question is:

"That the Bill further to amend the Atomic Energy Act, 1962, be taken into consideration."

The motion was adopted.

THE VICE-CHAIRMAN (SHRI H. HANUMANTHAPPA): We shall now take up the clause-by-clause consideration of the Bill.

Clauses 2 to 5 were added to the Bill.

Clause 1, the Enacting Formula and the Title were added to the Bill.

SHRI K. R. NARAYANAN: Sir, I move:

"That the Bill be passed."

The question was proposed.

DR. H. P. SHARMA (Rajasthan): Mr. Vice-Chairman, Sir, the Atomic Energy Bill, 1987, as the Minister has pointed out, is an enabling Bill empowering the Central Government to entrust the generation and disribution of power to a corporation or a Government company. And about that we can have no difference as such. The Atomic Energy Comission has set a goal of 10,000 MW by the year 2000 AD. As Prof. Rao has mentioned, I also wish to express my doubts whether the Commission would be able, at this rate to complete this task. But Sir, 10,000 MW is not a very big target at all. By 2000 AD it would constitute less than 5 per cent—3 or 4 per cent, at best—even if you can complete this target.

The question of Chernobyl has been raised more than once. Chernobyl will not go down as one incident in Soviet Russia, but it would be a drawing line between the thinking of **humanity whether humanity** will go ahead in the path of nuclear generation or will take a second thought at it France, which generates about 65—70 per cent of its power through nuclear generation, has gone on record, as have the Great Britain and Russia, that they would continue to go ahead with the generaion of nuclear power despite Chernobyl. But still we need to examine this problem very, very closely.

Sir, I have a technical question to which I am not competent to find an answer. Sir, in the final analysis, if there is an accident then in the *Candow type* reactors there is a provision that in case of loss the water cooling will come by gravity flow. If everything falls nothing else works. At least there would be a sufficient storage of it. That would come by gravity. My question relates to the FDR. There the coolant is molten sodium. What do we do? Do we store molten sodium also in that quantity?

Sir, another thing I would like to point out is that the Atomic Energy Commission power generation is being sold at the rate of 33 paise per unit or 35 paise per uint and the agency which buys it sells it to industrial units at twice that rate, that is, 90 paise or one rupee per unit. Now, why doesn't the Atomic Energy Commission corner the profit instead of giving to some other agency? why don't you get profit out it?

Another disturbing question is about de-commissioning part of the plant. What do we do? The life of a plant is usually about 25 years. The provision that we made for decommissioning the Tarapore plant—I am just speaking, Mr. Vice-Chairman, off-hand; I did not come prepared for the debate. If I remem-
1.00 p.m. ber correctly, the de-commissioning of a unit costs about 1 billion dollars per plant What are we doing about it? When we calculate the cost of nuclear power, we go by the cost of installation of the power unit. I think one of the major factors which we must take ino account should be the de-commissioning part of it. The Tarapur Unit cost us 65 crores of rupees. Its de-commissioning may run into hundreds of crores of rupees. It is about one billion dollars. If I remember a right, that is the cost estimated for de-commissomething about it? We will be faced it? Do we have the technology to do something about it? We will be faced with this problem. We are having trouble with RAP I. We will have to find some solution. *(Time bell rings)*. I am just finishing. We cannot change it. What are we going to do about RAP I? This is something which you must take into consideration seriously. With all these difficulties, I am all for generation of nuclear power. We must go thead with it. We have no option but to go ahead with nuclear power generation. I feel that we should do a lot more about it.

I would mention one thing more. So many times we fino fault with the public sector. But the nuclear power generation or the Atomic Energy Commission is dieffrent. Whenever I

[Shri K. R. Narayanan]

have had a chance to visit one of the units, I have felt proud that we have the necessary facilities, the personnel and the trained scientists who are handling these units. Madam I support the Bill.

SHRI K. R. NARAYANAN: Madam, I would like to answer some of the questions raised by the hon. Member. As regards the point raised by him about the storage of molten sodium, we have arrangements for storage of sodium in adequate quantities in tanks. We have actually introduced redundancy Coolant systems in the plants. We have provision for storage of molten sodium as well.

The other question raised by him is about the price per unit. It is quite true that the unit price of atomic electricity is very low. One of the effects of having this corporation would be that we would have freedom to adjust the unit price on commercial basis. We are not able to do it departmentally at present. Actually, there will be more freedom by creating this corporation. Commercially, we would be more free to adjust the prices. The Corporation would be making profits rather than losing on account of prices.

As far as de-commissioning is concerned, already we have technology for de-commissioning. We have developed the technology of de-commissioning. In fact, we have already decommissioned some of the small research reactors. For eaxmple, the reactor at zerline has been de-commissioned by us, by our scientists. So also the plutonium reprocessing plant at BARC has been de-contaminated. A new and larger plutonium reprocessing plant has been built on that site by our scientists and technologists. I want to assure the hon. Member that our atomic scientists and technologists have mastered on their own the technology for decommissioning.

DR. H. P. SHARMA: It has not been done anywhere in the world. Would you verify?

SHRI K. R. NARAYANAN: I am giving you the facts of Zerline having been decommissioned. It is a very small atomic reactor. And this has been done in other countries also. I understand, with regard to small research reactors. But none of the major ones has been decommissioned so far because they have not lived up to that age so far. I know that in the United States they are going to decommission the plant in Pennsylvania which was the first one. And I was told by US scientists when I was there that they have absolute mastery of this technology though it is a little expensive. And what we have done here in India is to contribute a small amount between one and 1.5 paise which is added to the unit price of atomic technology as the decommissioning cost. Therefore, we would have built up a decommissioning fund also so that by the time the plant becomes due for decommissioning, we would have finances available for undertaking that job. This will apply to RAPS-1 also. or RAPS-1, in fact, we have repaired the end-shield though right at the moment, it is closed down. But we have repared the cracks and we hope that we would be able to run RAPS at a lower rederated capacity in the future. We are also, as a long-term way of overcoming this, thinking of the need for replacing the end-shields, that is manufacturing the end-shields in India and replacing the defective ones so that this problem of leakage would not occur. Actually, a Committee has been set up to go into the necessity and the possibility of doing this replacing of the end shields. At the moment, we believe that by sealing the cracks, it should be possible to make this reactor function for a considerable time.

THE VICE-CHAIRMAN (SHRI H. HANUMANTHAPPA): The question is:

"That the Bill be passed."

The motion was adopted.